Thresher Shark Status Review Report: ID344

Peer Review Comments

We solicited review of the Draft Status Review Report of Common and Bigeye Thresher Sharks from ten potential reviewers. Three people agreed to be reviewers and provided reviews. Reviewer comments are compiled below from comments on drafts of the manuscript and are not in the order of the reviewer identification list below.

Reviewers (listed alphabetically):

Dr. Shelley Clarke
Technical Coordinator-Sharks and Bycatch
ABNJ Tuna Project (Common Oceans)
Western and Central Pacific Fisheries Commission
Kaselehie Street
Kolonia, Pohnpei, Federated States of Micronesia

Dr. Austin Gallagher
Postdoctoral Researcher
Carleton University
Ottawa, Canada

Mr. Joel Rice
Statistician, Modeler, Senior Consultant
Joel Rice Consulting
Saint Paul, MN

General Comments

Reviewer #1:

I really enjoyed this experience and even learned some new things. The assessment by the team [was] well done and I agreed with the conclusions.

Reviewer #3:

In general, I think the document is very sound and impressive, however, I think the shark fin trade section and regulatory/management sections need to be improved. There are a few key comments that if addressed would really strengthen the arguments put forward, but despite this I agree with all the conclusions drawn.

Specific Responses to Terms of Reference Questions

Reviewer #1:

Status Review of the Common Thresher Shark (Alopias vulpinus) and Bigeye Thresher Shark (Alopias superciliosus) Evaluate the adequacy, appropriateness and application of data used in the Status Review document.

1. *In general, does the Status Review include and cite the best scientific and commercial information available on the species, its biology, stock structure, habitats, threats, and risks of extinction?*

   Yes. The Status Review was extremely comprehensive, including data from a variety of published literature, grey reports, and unpublished data for all of the important factors listed above.

2. *Are the scientific conclusions factually supported, sound, and logical?*

   Yes, all of the scientific conclusions were supported and logical because they were indeed based on available scientific information. The fact that many regional populations of common and thresher sharks are stabilizing and/or slightly increasing in some cases is very important to this review. Although I was familiar with these estimates prior to conducting this review, I doubt that these findings are available or acknowledged by the conservation activist communities that generated the two species petitions. Certainly thresher sharks are prosecuted globally but in areas where good data are available and sound regulatory mechanisms are in place – the data are encouraging. These measures should be used as conservation success stories for the rest of the world.

3. *Where available, are opposing scientific studies or theories acknowledged and discussed?*

   Yes, I was particularly happy to see that, when appropriate or available, any contrasting scientific evidence and or theories were presented. The Status review was unbiased, objective, and comprehensive.

4. *Are uncertainties assessed and clearly stated?*

   Yes, they were always assessed and clearly stated

<u>Assessment of Extinction Risk for the Common Thresher and Bigeye Thresher Sharks</u>
Evaluate the findings made in the Assessment of Extinction Risk.

1. *Are the results of the Distinct Population Segment Analysis supported by the information presented?*

   Yes.

2. *Are the methods used for the Extinction Risk Analysis valid and appropriate?*

Yes. This Extinction Risk Analysis performed here was not fully quantitative, but in no way does that take away from its robustness, particularly when the quality of regional data can be tenuous or lacking altogether.

3. *Are the results and conclusions of the Extinction Risk Analysis supported by the information presented?*

   Yes. The Indian Ocean region needs special attention in the future for bigeye thresher sharks. If further genetic and movement studies on this species reveal information to suggest that this is indeed a distinct population region, then I would say that the high vulnerability of this region will indeed compose a significant contribution to its extinction risk. Moreover, a tangible measure to mitigate species population assessment issues imposed by species misidentification and/or grouping into "thresher complex" would be better education (i.e., species-ID guides, workshops for delineating species) for both developed and developing fishing nations that encounter thresher sharks directly and indirectly.

Reviewer #2:

Status Review of the Common Thresher and Bigeye Thresher Sharks
Evaluate the adequacy, appropriateness and application of data used in the Status Review document.

1. *In general, does the Status Review include and cite the best scientific and commercial information available on the species, its biology, stock structure, habitats, threats, and risks of extinction?*

In general the status review cites the best available information on the species biology and ecology. Both common thresher shark and bigeye thresher shark are fairly well studied with respect to the habitat, growth, reproduction and life history characteristics. The major scientific studies relating to biology and life history are covered in this review.

Both species are large, highly migratory animals that inhabit tropical and temperate oceans in costal and oceanic waters worldwide. Although migratory little evidence for significant immigration between basins exists. Stock structure for both species is well researched on a global scale, though gaps exist in the knowledge regarding the interconnectedness of at the basin scale, this seems to be a relevant gap in the data when reviewing the stock structure.

Habitat use has for both species has been assessed using state of the art techniques such as pop up archival satellite tags as well as conventional methods of studying fisheries interactions.

Threats to the species and the associated risk of extinction are largely related to commercial fisheries, both direct and bycatch. Because the thresher sharks are traditionally considered bycatch, commercial catch rate data are often incomplete or uncertain. This means that the

overall quality of the available commercial and scientific data is inconsistent in space and time.

2. *Are the scientific conclusions factually supported, sound, and logical?*

Yes in general the status review reviewed peer reviewed literature and agency reports. The literature reviewed is a compilation of the best available scientific literature. The commercial data is the best available, and need to be interpreted along with the other available data. For example the catch rate data from the Western and Central Pacific Ocean is based on the thresher complex, not an individual species. The scientific conclusions drawn from the available data are logical.

3. *Where available, are opposing scientific studies or theories acknowledged and discussed?*

When available opposing studies or studies that showed inconclusive results were presented. Importantly, the difficulties associated with studying sharks, namely they are often bycatch species and as such landings are not recorded, lack of recording to species level, under/misreporting, and the fact that bycatch CPUE may not adequately reflect abundance in a similar manner to target CPUE, etc. are presented.

4. *Are uncertainties assessed and clearly stated?*

Yes, the largest uncertainties associated with the status of the stock are (in general) the historical depletion, current and recent landings and the abundance trends. In general accurate data are unavailable worldwide, despite evidence of capture (both species) in a wide variety of fisheries. In fact the last lines from section 4.5D sum up the uncertainty associated with the available data and management.

"the mere existence of regulatory mechanisms does not necessarily equate to their effectiveness in achieving their intended purpose. Issues related to community awareness, compliance, enforcement, regional priorities, and complex political climates within many countries in which thresher sharks occur can limit the effectiveness of well-intended statutes and legislation. However, whether existing regulatory mechanisms are inadequate such that they contribute to the species' risk of extinction throughout their global range is highly uncertain."

<u>Assessment of Extinction Risk for the Common and Bigeye Thresher Sharks</u>
Evaluate the findings made in the Assessment of Extinction Risk.

1. *Are the results of the Distinct Population Segment Analysis supported by the information presented?*

   The Distinct Population Segment Analysis (DPSA) was conducted on a global basis for common thresher sharks, this is due to the lack of 'scientific or commercial information' need ted to support individual DPSs.

The status review document was unable to find information to define any DPSs as discrete on biological grounds for the bigeye thresher. This finding is supported in part by genetic studies (Naylor et al. 2012 and Trejo 2005). To meet the definition of a DPS, a population must be both discrete from other populations of the species and significant to the species as a whole (61 FR 4722; February 7, 1996). While a shallow population structure between the Indo- Pacific and the Atlantic was noted (Trejo 2005), the petition to list the bigeye thresher lacked detail as to the ways in which different management relating to international governmental boundaries may delineate the species into boundaries, or distinct populations. Technically this is correct though there is little evidence that any depletion or increase in one ocean would lead to an associated population level change in another.

2. *Are the methods used for the Extinction Risk Analysis valid and appropriate?*

   The extinction risk analysis (ERA) used the "risk matrix approach" in which the condition of the species is summarized according to four demographic risk criteria. This is a valid method and appropriate for these species. The ERA used a biologically reasonable foreseeable future timeframe of 30 years for common thresher and 50 years for bigeye thresher. These numbers are based on the decline and recovery of the North Eastern Pacific common thresher stock and the comparative biology/demography of the common and bigeye thresher sharks. These timeframes are appropriate.

   The methods used to assess the demographic risks are relevant and valid. Assessing a species on a global scale poses some challenges, chiefly what is the impact on the Atlantic stock of a large decline on the Mediterranean. The population exchange between these stocks in the each ocean (chiefly Indian, Atlantic and Pacific) is unknown but probably low, loss of a single stock would not constitute a risk to the species on a global scale.

3. *Are the results and conclusions of the Extinction Risk Analysis supported by the information presented?*

   Yes, in the summary section for common thresher it says
   "While common threshers experienced a significant historical decline as a result of overutilization in the North Eastern Pacific, a recent stock assessment shows that the species has recovered to more than 90% of pre-fished levels as a result of the implementation of management measures. In the Northwest Atlantic, an analysis of species-specific CPUE data indicates a stable (i.e., no) trend in abundance for common threshers since 1990, with reported landings stable over the last decade and averaging approximately 46,000 lbs (21 mt) per year. While the largest declines were detected in the Mediterranean, where common threshers are potentially targeted and heavily fished, we agreed that this area represents a small portion of their global range."

The Extinction Risk Analysis states,

" it is likely that the bigeye thresher shark has experienced declines of varying magnitudes throughout its range due to fishing mortality, recent relative abundance data included in this Status Review Report suggest that abundance trends are highly variable throughout the species' global range, with populations increasing, stable, slightly declining, or showing no clear trend."

This combined with the fact that bigeye thresher sharks have experienced decades of fishing pressure and still regularly occur in fisheries throughout the world as bycatch support the conclusions in the ERA.

Reviewer #3:

Status Review of the Common Thresher and Bigeye Thresher Sharks
Evaluate the adequacy, appropriateness and application of data used in the Status Review document.

1. *In general, does the Status Review include and cite the best scientific and commercial information available on the species, its biology, stock structure, habitats, threats, and risks of extinction?*

   In general, the review is well-researched and well-written. I have some substantive concerns about the shark fin trade and regulation/management sections which I believe need to be improved. See comments on text.

2. *Are the scientific conclusions factually supported, sound, and logical?*

   Despite the concerns mentioned above, I believe the conclusions are well-supported and I concur with them all. I would like to see the arguments strengthened as noted in my comments.

3. *Where available, are opposing scientific studies or theories acknowledged and discussed?*

   Especially in the regulation/management section there seems to be a willingness to take information from academic or NGO sources at face value. As noted in some of the comments a greater degree of objectivity is warranted in some cases.

4. *Are uncertainties assessed and clearly stated?*

   Yes. The authors do an excellent job in this respect.

Assessment of Extinction Risk for the Common and Bigeye Thresher Sharks
Evaluate the findings made in the Assessment of Extinction Risk.

1. *Are the results of the Distinct Population Segment Analysis supported by the information presented?*
   Yes

2. *Are the methods used for the Extinction Risk Analysis valid and appropriate?*
   Yes

3. *Are the results and conclusions of the Extinction Risk Analysis supported by the information presented?*

   In general, yes, but see comments on particular points.

Editorial Comments

Reviewer #3:

Most substantive editorial comments focused on the shark trade and regulatory mechanisms sections of the status review report. The reviewer emphasized the need to broaden the review of the international trade of shark products from just fins to include the market for shark meat as well. The reviewer pointed to a couple recent documents to be considered that emphasize a major downturn in the shark fin trade as a result of a global waning interest in shark fins, and a recent upswing in the trade of shark meat:

> *Page 102, last paragraph (section on Shark Fin Trade)*: This section needs work. In addition to updating the references to better sources of information, the focus needs to be expanded from fins only. Demand for shark meat is a critical recent trade that cannot be ignored as driver of shark catches, and this section does not mention this at all! Most of the discussion in the commercial fisheries section seems to relate to bycatch. Use of bycatch to serve an increasing demand for shark meat is a different issue.
>
> *Page 102, last paragraph, first sentence*: This point is somewhat contradicted by the latest comprehensive review of shark trade by FAO (here: http://www.fao.org/publications/card/en/c/a3e097e2-960f-41a0-b957-602563de5c7c/) which documents a major surge in the meat trade in the last decade. The trend you describe probably hit its peak from 1995-2005. I also suggest that Clarke, S.C., E.J. Milner-Gulland and T. Bjørndal. 2007. Perspective: Social, economic and regulatory drivers of the shark fin trade. Marine Resource Economics 22: 305-327. is a better reference as it is more on the topic of trade trends.
>
> *Page 135, last paragraph*: As noted previously, there has recently been a major downturn in the shark fin market (see Eriksson & Clarke 2015).
>
> *Page 147, Table 2:* As I indicated in previous comments, I think this criterion should have been more broadly defined as "trade". I see no reason to limit it to fins as meat

could also be a driver and in fact there is evidence of declining demand for fins and increasing demand for meat in several recent publications.

The reviewer also provided some criticism of using information from genetic studies of shark fins from various markets to make conclusions regarding the species-specific prevalence of common and bigeye threshers in the shark fin trade. The reviewer cautioned that these genetic studies may not be representative of the markets in each respective country and that these studies only support a conclusion that there is an "absence of evidence" regarding common thresher prevalence in the shark fin trade:

> *Page 104, second paragraph, 8th sentence*: It is difficult to know whether this sample is representative of the entire Indonesian market. It might, for example, have come from one dealer who specializes in buying from vessels who fish in an area where thresher sharks are common (in contrast, my Hong Kong sample was for the entire amount of shark fins auction in Hong Kong over an 18-month period--so I don't like to see it contrasted with a potentially one-off, unrepresentative samples from subsidiary markets).
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> *Page 106, last paragraph, 4th sentence*: As I mentioned above, I do not think there is sufficient information on the representativeness of the shark fin genetic studies you cite to support this point.
>
> *Page 149, second paragraph*: As expressed in previous comments, I rather doubt the representativeness of these small-scale genetics studies and unfortunately my Hong Kong study does not shed any light on which thresher species are used.
>
> *Page 153, second paragraph, second sentence*: Ok to say there is absence of evidence for their presence, but I doubt the representativeness of these studies (or, I should say, I remain to be convinced, having not seen them).

The reviewer also disagreed with the interpretation of how shark fin regulations impact the trade, and in particular, how U.S. regulations have impacted the shark fin trade and declining prices of U.S. fins.

> *Page 121, third paragraph in response to "as a result of the implementation of fin bans in various U.S. states in 2012 and 2013, US Atlantic fin prices decreased dramatically and U.S. shark fin exports have continued on a declining trend."*: I have a different interpretation: it is not the supply (i.e. the U.S. regulations) that is driving this, rather the demand for shark fin is waning. See the Eriksson and Clarke 2015 paper.
>
> *Page 154, last paragraph, third sentence*: These actions [shark finning bans or prohibitions on the sale or trade of shark fins or products] decrease the supply, not the demand.

The reviewer also cautioned the use of information from NGOs regarding trends in the shark trade.